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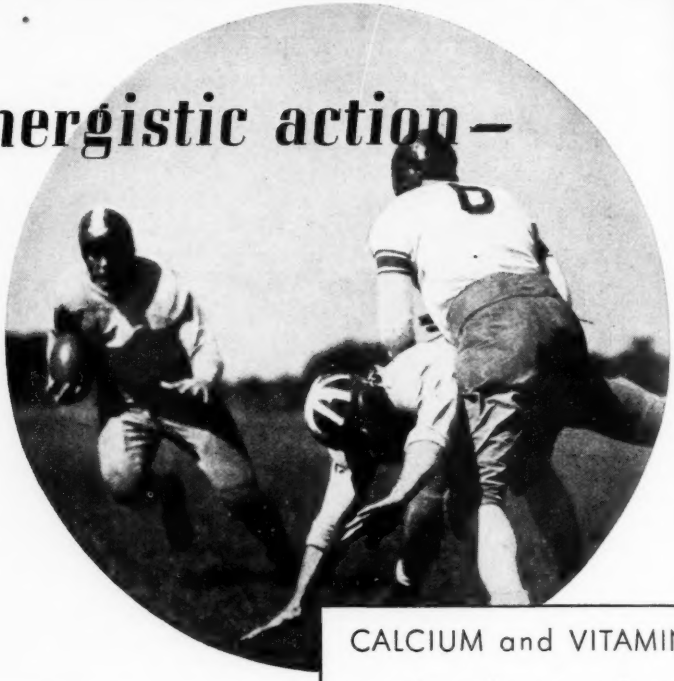
Synergistic action—



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THE JOURNAL OF SCHOOL HEALTH

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VOL. VII APRIL, 1937 No. 4

POSTURE IN THE SCHOOL

NATHANIEL MILLS, M.D.

Medical Inspector, Public Schools, Mount Vernon, New York

There is no one any longer who maintains that "faulty posture is nothing" or that "the child will outgrow it." For it is well known that a great many cases go on to a gross deformity, and many, even of the slighter cases, have in later life grave disabilities secondary to their faulty posture. The lungs and heart may be compressed and impaired in their action, the abdominal organs displaced and low back pain produced by faulty posture.

It is also well known that posture defects, both Round Backs and Lateral Curvatures are in the first place symptoms of other conditions and that it is extremely important to recognize these underlying conditions in order to treat the posture to the best advantage.

The normal variations in the rate or growth are of interest to us, because when a graph of the growth is charted, a sharp rise in the growth curve is seen in both boys and girls between the ages of four and five years, again between seven and eight for the girls and eight and nine for the boys, with finally a sharp rise between eleven and twelve for the girls and between twelve and sixteen for the boys. When a similar graph was charted of the onset of posture defects, a sharp rise was seen corresponding to these same rapid growth periods. This is of importance to us as a child's most rapid growth occurs and a majority of posture defects have their onset or rapidly increase during school age. These children should be carefully observed and, when indicated, given the necessary treatment.

Dr. William H. Holmes, Superintendent of the Mount Vernon Schools made a ruling in October, 1931, that all children with defective posture should be examined by the Orthopedic Surgeon on the Medical Staff before being given corrective exercises by a specially trained teacher of physical training assigned to corrective work. This teacher, from February to June, 1936, inspected all the children in the elementary schools to grade them A, B, C, or D, in posture and to refer those with defective posture to the Orthopedic Surgeon for a special examination. Her method of screening was to have the child, undressed to the hips and with the shoes off, stand on a stool. She then looked at him both back and side. She planned to refer only D grade posture, but when a case was particularly puzzling it was referred even though of A grade. The cases obtained by this screening were examined by the Orthopedic Surgeon from October 13th to November 20th, 1936.

While in charge of the Scoliosis and Posture Clinic at the New York Orthopedic Dispensary and Hospital for eleven years, the author worked out a system and chart for the examination of posture cases. All new cases were examined, the examination recorded on this special posture chart, and an X-ray was taken at this time. Before making any recommendations for treatment, the case was re-examined with the X-ray, which had meanwhile been carefully studied, and findings were charted. Based on this chart, worked out at the Posture Clinic in the New York Orthopedic Dispensary and Hospital, a brief card has been perfected to record the posture examination of school children.

DIVISION OF PHYSICAL EDUCATION

Posture Examination

Mount Vernon, N. Y.

Name.....School.....

Address.....Telephone.....

General History—

Previous Individual Work—

Orthopedic Treatment—

Diagnosis—

Recommendations—

.....M.D.

Grade								
Date of Exam.								
Age								
Weight								
Height								
Height Sitting								
General Condition								
Head								
Shoulders								
Chest								
Abdomen								
Trunk								
Pelvis								
Deviation Lateral								
Anterior-posterior								
Flexibility								
Correctability								
Muscle Power								
Imbalance								
Posture Grade								

Remarks:
Feet

The following equipment was found necessary for conducting this examination:

(a) The Posture Card, illustrated, with carbon.
(b) Box or stool, to take the sitting height.
(c) Three boards ¼", ½", and 1" in thickness, used under the foot of the low side to level the pelvis.
(d) A long flat firm table.
(e) Scales, measuring rod and yard stick.

The child, undressed to below the hip line and with his shoes off, stands with his back to the doctor, knees straight with feet together, and is told to "look straight ahead." This has been found to be the best method to get a child to hold his normal posture, for when told to "stand up straight," a child invariably assumes a forced posture.

The author found that, working steadily, he could examine carefully and record on the card five posture cases in one hour. The examination was recorded in duplicate, the original to be attached to the pupils individual medical card and the carbon copy to be retained by the orthopedic surgeon for his reference.

On the front of the posture card under General History—was recorded the date when the defective posture was first noticed. This was most often taken from the school medical card, as the posture would usually be noticed in school long before the parents or the child were aware of it. Any previous corrective exercises in the Physical Education Department were noted under Previous Individual Work.

The Height Sitting is recorded, as it is felt that a comparison of the height sitting with the total height is a most valuable check on the progress of posture defects.

The General Condition—is recorded as: G = good, F = fair, or P = poor.

The position of the head when erect as a perpendicular line 1, or as forward: F_1, F_2, F_3, or Rt_1, Rt_2, Rt_3, Lt_1, Lt_2, Lt_3.

The shoulders when level are recorded as a horizontal line —, and the high shoulder as : Rt_1, Rt_2, Rt_3, or Lt_1, Lt_2, Lt_3.

The chest and the abdomen as : A. B. C. or D.

The displacement of the trunk as: Rt_1, Rt_2, Rt_3, or Lt_1, Lt_2, Lt_3.

The position of the pelvis was checked by placing the fore fingers on the anterior superior spines of the ilium, when a difference in height of less than ⅛" could be noted. A tilt of the pelvis was leveled off by placing boards of ¼", ½", of 1" under the foot on the low side and the finding recorded as: $Lt\frac{1}{4}$", or $Rt\frac{1}{4}$", $Rt\frac{1}{2}$", etc. A level pelvis is recorded as: a horizontal line — and a forward tilt as: F_1, F_2, or F_3.

Lateral deviation of the spine is recorded as: Lt_1, Lt_2, Lt_3, or Rt_1, Rt_2, Rt_3; posterior as: P_1, P_2, P_3 and anterior as: A_1, A_2, A_3 with the region affected as: Dorsal — D, or Lumbar — L.

The lateral flexibility is tested by steadying the pelvis between the knees

of the examiner and swaying the trunk above the pelvis gently to the left and right, first confining the motion to the lumbar and then to the dorsal spine. In structural curves a definite check will be noted on motion against the curve. The findings are recorded as flexibility: Normal = N, or impaired; Rt_1, Rt_2, Rt_3, or Lt_1, Lt_2, Lt_3.

The subject is then forced into as complete over correction as possible, and the findings recorded as correctability: +3, +2, +1, —1, —2, —3, according to the resistance encountered.

Finally, the child is placed supine on the table, and told to raise the head. This tenses the recti muscles, and their condition is noted. On sitting up, the power in the lateral abdominal groups and swaying to the right or left is noted. The power in the spinal groups is tested by bending forward and then straightening up against resistance, when the examiner also watches for any increased lateral bowing of the spine. The findings are noted as Muscle Power; G, F, or P, and imbalance; Rt_1, Rt_2, Rt_3, or Lt_1, Lt_2, Lt_3.

The Posture Grade is recorded as: A, B, C, or D, according to the grading of the American Posture League.

An examination of the feet is recorded as: G, F_1, F_2, F_3 and Muscle Bound = M when a short calf is noted.

The position of the shoulders in normal posture is primarily controlled by the shape of the clavicles, and the relative power in the rhomboid and the pectoral muscles, although the shoulders may be forward secondarily due to a round back. Weak rhomboids allow the scapulae to wing and, in extreme cases, to ride forward, while overaction of the pectoral muscles or anterior angulation of the clavicles will hold the shoulders forward. These and other conditions which are important in the causation, treatment, and prognosis of defective posture are noted under remarks.

While standing with head erect, the child is asked to depress the arms against resistance, and is observed from behind. If the scapulae wing, the rhomboid muscles are weak. The rhomboid muscles may even be congenitally absent; then the scapulae not only wing but travel forward. It is important to note this, as when the rhomboids are absent the scapulae are permanently winged, and very little can be done to improve the shoulder posture. Weak rhomboids should be worked on carefully and persistently to increase their power and improve the shoulder posture as much as possible. The child is told to lie prone with the head down and the arms extended above the head; then the arms are forced gently backward and the resistance which is due to the pectoral muscles is noted. Tight pectorals tend to hold the shoulders forward, and in these children especial attention must be paid to stretching the pectoral muscles. The curves of the clavicles are observed, and any undue angulation or hooking of the outer ends is

noted. Hooked clavicles may hold the shoulders forward so that it will be impossible by exercises greatly to improve the shoulder posture.

There are certain changes in the bony structure or relations which should be noted, and if possible later confirmed by X-ray. Certain cases show a rather sharper kyphotic deformity which would indicate an undue wedging of the bodies of the vertebrae. These are recorded as of the wedging type, and should be observed more carefully and referred for Orthopedic Consultation and X-ray if they are not progressing favorably. If there is a sharper than normal angulation of the spine at the lumbo-sacrael junction, either a forward or backward, or left or right, abnormal relation of the 5th lumbar vertebra is suspected, and is recorded pending X-ray confirmation as an abnormal 5th lumbar. One case in this series showed a hemivertebrae which had been confirmed by previous X-ray.

A lateral tilt of the pelvis indicates a short leg on the low side, unless there is a pelvic asymetry, which is a rare condition. This shortening most often occurs at the upper end of the femur. Any force, to produce a structural deformity of the spine, must be acting constantly. As the deforming force exerted on the spine by a short leg acts only when the child is standing squarely on both feet, such a tilt produces only a postural deviation of the spine. Certain cases with tilted pelvises do have structural deformities, but this is always due to some additional factor. In the examination, all lateral deformities in which no impairment of flexibility or imbalance can be demonstrated are recorded as postural. A structural deformity must have a definite impairment of flexibility or show a definite imbalance.

All children with structural lateral curvatures, and those of the wedging type, should be observed more carefully, and referred for Orthopedic Consultation if they are not progressing favorably. The comparison of the height sitting with the total height is an excellent rough check on the progress of the condition.

Of the 223 children with defective posture, screened from the elementary schools, who were examined at this time, there were 112 in whom the defect had been noticed for one year or less, and of the rest two-thirds for three years or less. At the time of this examination three-fourths of the children were between the ages of seven and eleven.

The most significant findings brought out in this examination are given in the tabulation below:

General Condition: G-73, F_1-38, F_2-4, P_1-50, P_2-35, P_3-16.
Chest: A-27, B-74, C-75, D-46.
Abdomen: A-9, B-69, C-77, D-67.
Pelvis: Lt-66, Rt-38, L-118, F-56.
Lateral Curvature: 121, Postural L. C.: 76; Anterior-posterior: 206.
Correctability: +3-140, +2-25, +1-18, —1-21, —2-10, —3-7.
Flexibility Impaired: 102, Normal: 120.
Muscle Power: G-102, F-16, P-4.
Imbalance: 58, Normal: 164.

Posture Grade: A-0, B-36, C-112, D-74.
Feet: G-32, F_1-76, F_2-69, F_3-48, M-14.
Screening Posture Grade: A-1, B-24, C-79, D-113.

As can be seen from the above tabulation, the *number* of children posture graded A, B, C, or D, in the screening by the Physical Education Teacher is roughly the same as in this examination, but *the cases are not the same*. There were 74 cases in which the posture grade in this examination was found to be increased by one point, and in fourteen cases by two points, over that found in the screening. The grade was decreased in forty-four cases by one point and in five cases by two points. This is a total of 137 cases in which the posture grade was either increased or decreased, while in only 59 cases it was found to be the same.

The following conditions which should be of importance in governing the treatment and prognosis in any child with a posture defect were noted and recorded:

Absent Rhomboids: 9, Weak Rhomboids: 97, Tight Pectorals: 65, Hooked Clavicles: 45, High Scapula (Congenital): 10, Infantile Paralysis: 6, Spastic Paralysis: 3, Torticollis: 4, Weak Serratus: 1, Weak Left Rectus: 1, Weak Illiopsoas: 3, Slumping Type: 27, Wedging Type: 27, Hemivertebra: 1, Abnormal 5th Lumbar: 17; Asymetrical Pelvis: 2, Rachitic Chest: 9 Pendulous Breasts: 2, Mouth Breather: 1, Knock Knee: 5, Short Tibia: 5, Shortening at lower end of femur: 1, Congenital Club Foot: 2, Congenital Hallux Valgus: 1.

A tabulation of the recommendations made for the treatment of these children, following the findings in this examination, is as follows:

1. Corrective Exercises, 110.
2. Corrective Exercises (Observation), 92.
3. Orthopedic Consultation, 16.
4. Raise Shoe, 39.
5. Observe, 3.
6. Supporting Brassiere, 1.
7. Nose and Throat Consultation, 1.

In conclusion it can be seen from the above that a careful posture examination of school children is of the utmost importance both to grade them properly, and also to discover, when possible, any underlying factors that may guide us in our recommendations to the parents and to the Physical Education Department.

* * * * *

Allen J. McLaughlin, M.D., has recently joined the staff of the Division of Hygiene and Public Health of the University of Michigan, having accepted the Chair of Communicable Disease Control and Epidemiology. Dr. McLaughlin has held a commission in the United States Health Service since April, 1900, and has had a notable and splendid career in that service. He is a past President of the American Public Health Association. He is a splendid addition to the faculty of the University of Michigan, and his training and experience make him peculiarly well-fitted for the position he has accepted.

TUBERCULOSIS: A PROBLEM OF THE SCHOOL PHYSICIAN

ALFRED H. PARSONS, M.D.

Medical Director, Public Schools, Great Neck, New York

The problems that confront the school physicians of today vary with the age of the pupils. Certain physical defects and certain diseases present problems among pupils of the kindergarten and early primary grades, while other abnormalities and diseases are more prevalent among older pupils.

Tuberculosis is definitely an upper grade problem. It finds its victims mostly in the late teen age and it produces its greatest mortality in the early twenties. Therefore, the time to look for the early lesions that will later flare up and become dangerous, or fatal, is in the late teens.

Paul de Kruif in his article, "It Costs Us Money to Die," *Country Gentleman,* February, 1937, says, "The wiping out of tuberculosis is absolutely not a humanitarian, a sentimental, a pious project. It is not to dry tears that it is demanded that we do it. No, it is to balance the budget. It is not to soothe mass heartbreak. It is to pacify the taxpayers. It's no philanthropy to rub out every TB microbe. It's sound business. It's true economy. And we can prove it."

The greatest problem in the past has been to find these early lesions, the minimal cases, for this insidious disease usually presents no observable symptoms until it is moderately or far advanced. True, we have had the X-ray for many years, and we have known that X-ray would usually reveal the early lesions long before clinical symptoms appeared. But the high cost and inconvenience of the X-ray placed it entirely beyond the reach of the school physician as a means of routine examination of the apparently healthy individuals under his care, who were just as likely to be harboring an early lesion as the pale, thin, anaemic, sickly looking pupil. That condition is now a thing of the past. As our Committee on Tuberculosis has pointed out in their report which appeared in the January and February issues of *Journal of School Health*, there is now available a method of making radiograms of the chest that is so rapid and so inexpensive that practically everyone may now have X-ray films made of the chest. Thus we school physicians now have added to our armamentarium a weapon, which, in addition to those we already had, will enable us to win the battle against the disease which Chadwick says is responsible for more than three times as many deaths as all the acute communicable diseases together in the age group ten to nineteen years.

To put on a successful campaign against Tuberculosis requires organization. The parents of the school children must be enlightened as to the prevalence and dangers of Tuberculosis and its possible detection by the new X-ray Paper Film. The aid of leaders in the community must be enlisted, including the physicians, Board of Health, School Boards, Superin-

tendent, Presidents of Womans' Club, Parent-Teachers Associations, Lion, Masonic, Knights of Columbus and Elks Clubs and all other organizations that hold the health and welfare of their children dear to them. All must co-operate to "Get these death-sprayers out of circulation . . . . . prevent them from sprinkling the White Plague upon others."

Briefly described, the new method involves the use of a portable X-ray unit of high power, a new paper X-ray film in rolls, a new rapid method of placing on each radiogram such case data as are desired, a power driven, automatic, processing machine for developing the exposed rolls, and a special mechanical viewing cabinet for reading the rolls of radiograms after they are developed.

The portable X-ray unit is transported in an auto truck especially designed to receive it, and to protect it against damage in transit. This unit is set up in the school in any convenient place, such as the gymnasium, the stage of the assembly room, or in an office room. The space required is about twelve by twelve feet, which allows working room for the operators and for a line of subjects approaching the unit. About thirty minutes are sufficient completely to assemble the unit ready for operation. A connection is made by means of a flexible rubber-covered insulated cable to a source of 220 volts, 60 cycles, alternating current.

This X-ray unit uses a paper X-ray film which comes in rolls about 155 feet long, sufficient to take 100 radiograms, each 14 x 17 inches.

In order to identify each radiogram and also to have before the radiologist who will subsequently read them the individual case data required, such as name of pupil, age, grade, name of family physician, etc., an ingenious and effective method is used. This consists of a stencil writing machine, which is an electrically driven typewriter having pinpoint letters. A composit card is used, consisting of a thin sheet of lead cemented to a layer of cardboard. This card is inserted in a card holder in the stencil machine and on it is typed such data as is desired, the pinpoint letters perforating the sheet lead.

Such a card is typed for each pupil and is later X-rayed with the subject so that the identification and case data are X-rayed on the radiogram of the pupil's chest. Before being X-rayed, each pupil is required to strip to the waist and the girls are supplied with cotton halters. Boys and girls are assigned different hours, or in large schools, are X-rayed on different days.

In order to carry out the examinations in an orderly and expeditious manner some supervision is necessary. Usually the school nurse, the athletic director, or one or two teachers are in charge, under the general supervision of the school physician and the school principal.

The usual procedure is to have the pupils disrobe to the waist in the gymnasium locker room or, in the absence of such facilities, in any convenient room. The girls don the halters referred to above, and march out

FIG 2

81 JAGENBERG, RENE
17 YRS. 12TH GRADE
Dr. ALFRED H. PARSONS

FIG 1

FIG 4

to the unit. As the line approaches the unit, it passes a desk at which a typist writes a stencil card for each pupil. At the X-ray unit, the pupils, one by one, are positioned in front of the film box, the height of the box is adjusted by the technician to the height of the pupils chin, the arms and shoulders are correctly positioned and a compression band or immobilizer is placed across the shoulders of the subject to prevent movement. In the meantime, while the pupil is being positioned by one of the technicians, a second technician sets the electrical controls to suit the size or chest thickness of the pupil and when all is in readiness, he makes the exposure, which is usually one-tenth of a second. The pupil then is released from the compression band and the next in line steps into position. A new portion of X-ray film is turned up into place and the process is repeated. The entire cycle takes from fifteen to thirty seconds, and an average of 125 to 150 pupils can be X-rayed per hour. The time loss from regular classroom work is reduced to a minimum. A class of forty pupils can be X-rayed in twenty minutes.

After exposure, the rolls of films, a hundred X-rays on each roll, are sent to the laboratory at Glen Cove, New York, for development. They are then returned to the school physician or to whomever is to read them. Usually either local radiologists or the radiologist of the local tuberculosis sanitorium does the reading and diagnosing. In our own case, several radiologists have offered their services gratis, and are willing and anxious to read our school radiograms for two reasons: First, for the valuable experience it gives them; and second, because of the business that accrues from the follow-up work in those cases where definite lesions or suspicious shadows are found.

In fact, one of the inherent characteristics of this rapid paper film method which makes it appeal to the physicians and radiologists in localities in which it has been used is the fact that each film bears on its face the name of the family physician, given and recorded at the time the radiogram was made, and the fact that reports of findings are sent direct to the family physician and not to the family. Thus, every case discovered is definitely linked up with the family physician, who in turn, when additional or periodic follow-up X-rays are needed, refers the pupil to the local radiologists.

Sometimes the financing of an X-ray examination of the pupils in a school presents a problem, to which several answers have been found. No doubt the logical and proper answer is that the cost, which is very moderate, should be met out of public funds, that provision should be made in the school budget for X-raying certain classes each year. A number of school districts on Long Island make such provision in their budget, and the number is increasing each year. Another method which has often been used is to ask the parents to pay a nominal fee of, say, one dollar. As the X-rays in large numbers cost but seventy-five cents each, twenty-five cents of each

dollar paid in can be used to X-ray pupils whose parents are not able to pay. In a community like Great Neck, a predominently residential community, fully three-fourths of the families can afford to pay a dollar.

A third method has also been used in many schools. The local tuberculosis society has offered to bear the expense of X-raying pupils the first time to demonstrate to the community the practical value and the importance of checking up on the young people. In New Jersey and Pennsylvania this method of financing has been extensively used and in other states to a lesser extent.

The finding of the early cases, and particularly the finding of the more advanced but unsuspected open cases, which are spreading infection right and left among classmates and other contacts, is a matter of public interest and should be a public charge. And it is a matter of sound economics also. It has been estimated that the average case of tuberculosis that is not arrested in its early stages, but is allowed to progress to the hospitalization stage, costs in lost time and wages and in hospital costs about four thousand dollars. Much of this bill is met by the taxpayer for the support of public clinics, sanitoria, and the like, and much of it can be saved by finding the cases early.

Questions have been raised as to the diagnostic quality of the paper radiograms, and their adequacy for the purpose of screening out early lesions of tuberculosis and other chest pathology. The answer to these questions is a definite affirmative. These paper films have been used for the past five years here in our vicinity. They have been used in literally hundreds of schools, colleges, offices, factories, and clinics in the East and Middle West. They have been interpreted by some of the most prominent readers in the country and found, as our own tuberculosis committee reported, "satisfactory in every respect."

* * * * *

Health Education.—Some of the more significant supervisory and consultant procedures which developed in the experimental program of rural school health education in Cattaraugus County, New York, are here described. Among these procedures are included conferences with individual teachers and groups of teachers, committee activities, curriculum building, more fully given in the handbook on this subject edited by Miss Grout, and ways of unifying community health resources with the educational program. —*"Rural Supervision of Health Education."* By Ruth E. Grout, Director of Health Education Study, Cattaraugus County, New York. *The Journal of Health and Physical Education,* Vol. VIII, No. 2, February, 1937, pp. 78-79, 120.

EDITORIALS

"In the health of the public lies the wealth of the nation."—GLADSTONE.

Repeatedly, laboratory reports of bacteriological studies made on dishes, particularly drinking glasses, used at soda fountains, ice cream parlors, and beer saloons indicate a very high bacterial count, which means that a considerable proportion of these places either do not have or do not use effective methods for cleansing or washing dishes and glasses following each usage. Investigations of cleaning methods indicate that, if the glasses are washed at all, they are merely rinsed in a bucket of nearly cold water containing little soap and no antiseptic. In such places, the only safe procedure is for health authorities to compel the use of paper dishes and cups. Advice against patronizing places that do not safeguard their patrons by providing paper cups and utensils should be a part of the health teaching program in the schools.

In order to bolster precept by practice, bacteriological studies might well be made of the dishes and glasses in school cafeterias. Unsafe conditions there should be remedied, either by the provision of effective dish and glass washing procedures or by the mandatory use of paper cups.

Oftentimes our local sanitary regulations are illogical. We compel the service of pasteurized milk in the original bottle in which it was received from the pasteurization plant, and then permit it to be poured into a filthy drinking glass.

* * * * *

Again parents, school officials, and public are horrified at a great school disaster—the worst in our history. The explosion of gas in the elaborate, modern, and expensive consolidated school at New London, Texas, wiped out in a flash and a roar 455 youthful lives approaching adolescence and adulthood.

Following other schoolhouse catastrophies, an aroused public has compelled changes in care and in construction. The need of many of these was so obvious that it is unthinkable that those responsible for the welfare and lives of the children placed in their hands should have waited for coercion.

New devices require new precautions, advanced study, and regulation. At present, it is not clear whether this recent destruction was due to faulty flues, to flues emptying into the attic, or to the collection of gases under the floor. It seems clear that this catastrophe was due either to faulty construction, to lack of adequate ventilating currents below the floor, or, possibly, to the use of a more dangerous type of gas than is permissible as a means of heating in a school house.

In any case, it behooves every community where the heating of schools or other public buildings is done by means of gas, whether in a central fur-

nace or at individual radiators, to secure up-to-date engineering surveys by experts who know the subject, and to carry out immediately the recommendations of these experts. Costs, ignorance, carelessness, or desire for financial gain should not be allowed to stand in the way of safety.

As a result of this disaster, we shall now have another wave of investigation, advice, and legal regulation. These are desirable, but more careful construction, and better administration of our school buildings, going on continuously, is the right of children, parents, and other citizens.

The citizens of Oklahoma City feel that that well-known ounce of prevention is worth a pound of cure. Taking the ghastly lesson of New London, Texas, to heart, the community's forces of fire and pipeline inspectors are inspecting conditions in the schools. In the circumstances, it is easy to understand the *Daily Oklahoman's* comment on the New London disaster to the effect that "our authorities will be guilty of unpardonable murder if their carelessness or indifference permits a comparable tragedy to occur in our civic midst."

How much do we know about the conditions in our own school plants? Do we make frequent inspections, and insistent recommendations for safe and sanitary conditions? Such activities definitely fall within the duties of school physicians, nurses, and others connected with the health service.

Eternal vigilance is the price of safety.

* * * * *

ABSTRACTS

Physical Handicaps of School Children.—Payne* gives a summary of the physical defects found in a group of 5, 412 children attending the grade schools in Dayton, Ohio. Three-fourths of the children show one or more physical handicaps of either major or minor significance. Physically the grade school child of today is rather far from the goal that pediatricians have constantly been striving to attain. Of the children examined, 3,102 showed some degree of dental caries or malalinement with malocclusion. More than half of the children needed dental attention. Underweight of 10% or more was found in 23%. The graph of malnutrition as expressed by this group of children is particularly interesting because of the fact that the child aged 6 years and the one aged 11 years seem to be the most underweight. In the intervening years and from 11 years on, however, the cases of malnutrition decrease quite noticeably. Hypertrophied or diseased tonsils and adenoids ranked third in frequency among this group of childhood defects. Of the children inspected, 20.7% showed evidence of nasopharyngeal abnormality. A graph designating diseased tonsils and adenoids showed that the child aged 9 years was the most commonly afflicted with disease or hypertrophy of the adenoids and tonsils. In the examination of children from the third to the eighth grades inclusive, 19%, through means

**Physical Handicaps of the Present Day School Child.* C. C. Payne, Ohio State Medical Journal, Columbus, Ohio, January, 1937, p. 24. *The Journal A.M.A.*, March 6, 1937, p. 843.

of the visual acuity tests, were detected to have defective vision. Since about one child out of every five within the third to the eighth grade does not have proper sight, owing to refractive errors primarily, sight conservation measures within a city or state medical regimen should be constantly instituted to combat this ever-menacing entity. Only 4.9% of the children were discovered to have palpable thyroids. These varied from one plus to three plus in size. The graph for goiter shows a gradual but progressive increase in incidence of goiter from lower to higher grades. The highest incidence was found in the eighth grade. Skin diseases ranked sixth in frequency, 2.4%, varying from the chronic eczemas to the contagious skin lesions of either infectious or parasitic origin. Other childhood handicaps, such as those associated with the heart, the speech and the hearing, occurred, but with far less frequency.

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The Communicable Diseases of Childhood.—Outstanding among the favorable developments of 1936 is the record for the four principal communicable diseases of childhood—measles, scarlet fever, whooping cough, and diphtheria. Not only was the death rate for all four combined (6.5 per 100,000) at a new minimum for all time, but each of these diseases, individually, recorded a lower mortality rate than ever before. The greatest significance attaches to the record for diphtheria. Twenty-five years ago the death rate for this disease was 27.3 per 100,000, and deaths from diphtheria constituted substantially one-half the total for all four childhood diseases. The rate in 1936 was only 1.8 per 100,000, or less than 1/15 that recorded a quarter of a century ago. Similarly, the measles rate has been reduced to 1/13, and those for scarlet fever and whooping cough to 1/6 and 1/4, respectively, of the figures prevailing in 1911. These pronounced declines mark important progress in the application of modern public health methods toward the saving of child life. *Statistical Bulletin,* Metropolitan Life Insurance Company, January, 1937, p. 4.

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Relation Between Measles and Tuberculosis.—Carrara* made a study of 1,470 children hospitalized in a pediatric clinic in connection with the problem of the relations between measles and tuberculosis. Measles does not predispose the organism to the development of tuberculosis. The rate of stimulation of latent foci and reactivation of healed tuberculous foci is low (11.2%) except in children under the age of 5 years, in whom it is high. Measles has an unfavorable influence on the evolution of tuberculosis in young children, in children who have had tuberculosis for a short time on development of measles, and in children who are suffering from acute tuberculosis, regardless of age. As a rule, acute tuberculosis com-

**Relations Between Measles and Tuberculosis,* Pediatria, Naples, p. 1041. *The Journal, A.M.A.,* February 6, 1937, p. 513-14.

plicated by measles evolutes toward disseminated miliary tuberculosis or tuberculosis meningitis. Stimulation, reactivation, and aggravation of tuberculosis in measles is due to dysergia and enanthemic changes of the respiratory tract in the course of measles. Reactivation and reaggravation of tuberculosis takes place within a period no longer than a year after measles. Any late change in the evolution of the former cannot be related to the latter. The reactivation of tuberculosis following measles can be prevented by administering serum from convalescents. The latter is especially indicated in all children with secondary allergy or sensitivity to tuberculosis as well as in children exposed to a reinfection and in those under the age of 5 years

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Anti-Diphtheria Inoculation.—Immunization against diphtheria is an excellent example of the principle that public health measures are never regarded as perfect. Fifteen years ago toxin-antitoxin was thought to be the final solution, but more research workers than ever have been studying the problem. Errors have been found and corrected, and attempts have been to improve the product. The development toward a toxoid has been successful but the most recent trend toward an alum toxoid which can be given in one dose is not so promising. It is a matter of common sense that one inoculation of an immunizing agent cannot produce the same degree of immunity as will three inoculations of a suitable material. This tendency is analogous to the short-lived attempt during the war to vaccinate with one dose of typhoid vaccine suspended in oil. *Illinois Health Messenger,* March 15, 1937, p. 35.

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Diphtheria Immunization and Cases.—Collins* conveys the information on the history of artificial diphtheria immunizations obtained on 8,758 white families in 130 localities in eighteen states. The group makes a composite cross-section of the population of the United States. Considering the whole group, 43% of children 9 years of age gave a history of an artificial diphtheria immunization; above this age the percentage declined at from 20 to 24 years only 5% gave such a history. About 7% gave a history of an attack of diphtheria at this age period. Boys and girls show about the same percentages with a history of diphtheria immunization. Boys less than 10 years of age gave more histories of attack than girls. In the Northeast and the South the percentages of persons with a history of diphtheria immunization were somewhat higher than in the North Cen-

*Collins, S. D. *History and Frequency of Diphtheria Immunization and Cases in 9,000 Families: Based on Nation-wide Periodic Canvasses* 1928-1931, Public Health Reports, Washington D. C., December 18, 1936, p. 1736. *The Journal A.M.A.,* February 13, 1937, p. 598.

tral and Western regions. The South was also high in histories of attacks, but the Northeast was low. Histories of diphtheria immunization were as frequent in rural as in urban places, but histories of diphtheria attacks were most frequent in large cities. The frequency of diphtheria immunizations of children of the pre-school ages increases regularly with family income; in the school ages the frequency of immunizations does not show any consistent relation to income. The peak of diphtheria case incidence occurs at a younger age in the South than in the North. The peak of diphtheria mortality in the registration states occurs at 2 years of age. The maximal diphtheria case fatality occurs among infants less than one year of age.

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Alton Bans Diphtheria.—From Alton comes a report that a vigorous anti-diphtheria campaign conducted recently by the Public Health Council resulted in the inoculation of 85% of the public school children and 100% of the parochial school children. Up to this writing no case of diphtheria has been reported from Alton this year although the disease has been present in Madison County. Last year there were 9 cases reported during January and February from Alton. For the whole of 1936 there were 27 cases reported and 114 for 1935.

A good many municipalities have eradicated diphtheria in a similar way. Not infrequently, however, the victory is temporary only. Permanent control over diphtheria requires a persistent, permanent program of prevention. The inoculation of all susceptible children will protect a community only until this protected group has been replaced by the next generation. A continual program of prevention which results in the inoculation annually of a number of young children, those under school age, equivalent to the number of births in each year is the only way to protect a community effectively and permanently against diphtheria.—*Illinois Health Messenger*, March 1, 1937, p. 19.

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Impairment of Heart in Children After Diphtheria.—In order to determine whether permanent cardiac impairment develops after diphtheria and what significance it has, Beer* made a follow-up examination of children who had had diphtheria with cardiac complications during 1928-1935. Among forty he discovered seven who had noticeable cardiac disorders, in four of whom they were chiefly of a clinical and anamnestic nature with only slight electrocardiographic changes. The author gained the impression that the cardiac impairments which appear in the course of diphtheria disappear largely in the course of the following years. He points out that Hecht expressed the optimistic opinion that the cardiac defects caused by

**Permanent Impairment of Heart in Children After Diphtheria.* A. Beer, Jahrbuch fur Kinderheilkunde, Berlin, December, 1936, p. 152. *The Journal A.M.A.*, February 13, 1937, p. 604.

diphtheria disappear generally in the course of months. In view of all this, the author concludes that the role which some authors have ascribed to diphtheria in the heart diseases of older persons is only a supposition and requires further investigation.

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Whooping Cough.—Dr. J. P. J. Paton of Glasgow reports favorably in the January 17, 1937, issue of *Lancet* on his experiments with an intradermal test for susceptibility to whooping cough. The report was based on 371 cases in which the test was made. He concludes that:

"Certain incidents—the insusceptibility of positively reacting (immune) patients after exposure to infection, and the change of the reaction from negative to positive after an attack of whooping cough—support the view that the test is, within limits, a reliable index of susceptibility to *H. pertussis* infection."—*Illinois Health Messenger,* March 1, 1937, p. 20.

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Rabies.—On Friday, January 15, at about noon, Patrolman Patrick Sinnott, on school traffic duty at the Harrison School on Harrison and Union Avenues, noticed a dog in the school yard acting suspiciously. He placed a few children that had come out of the school in his police car and called the station. He was ordered to stay on duty and a detail under Lieutenant Sullivan was sent out to investigate. The latter followed the dog for about three miles from Harrison Avenue, down North Street, through the Westchester Biltmore Club property, back into the Sunny Ridge District, where he shot him. The dog crawled into a water culvert and the officer was unable to get him out. A small fire truck was sent for, and the firemen succeeded in dislodging the dog with a fire hose. The health department was then notified, and the dog's head sent to the State Laboratory, New York City. An examination of the dog's brain confirmed the diagnosis of rabies. *Westchester's Health,* Westchester County Department of Health, White Plains, New York, February 8, 1937, p. 3.

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Milk Allergy in School Children.—Williams* inquired into the family histories of 150 elementary school children who had refused milk at school. Of these, 124 appeared to be allergic to milk. They all had symptoms after milk, or a very definite dislike of it, and all except five gave a personal or family history of allergy. Twelve disliked the school milk only because of its taste (it was pasteurized) but it is significant that five of them came from allergic stock. Fifteen children refused the school milk for reasons unconnected with health. It did not disagree with them and apparently they were normal children; only two had allergic histories. Forty normal

**Milk Allergy in Elementary School Children.* D. A. Williams British Medical Journal, London, November, 1936 p. 1081. *The Journal A.M.A.,* February 13, 1937, p. 599.

children taking milk readily without ill effects were examined as a control; only four gave a personal or family history of allergy. While the popular movement to encourage the widespread consumption of milk has much to commend it, the fact that not every one can take it with impunity should be remembered. The refusal or disinclination of many children to take milk at school should be given due consideration. Their attitude is probably protective in nature to prevent them from suffering allergic reactions and possibly also to give them time to develop a gradual immunity to milk. Desensitization to milk not infrequently occurs as a result of its omission from the diet over a lengthened period, and the degree of tolerance often varies with the interval. Thus milk should not be forced on these children but rather withheld. * * * * *

Heart Disease.—According to this writer, there is much that the schools may do for the benefit of rheumatic heart disease cases. Among other suggestions are these:

(1) That the school medical examination be better utilized as a measure against rheumatic heart disease. All pupils should be stripped to the waist for physical examination.

(2) That school authorities co-operate in the management of the disease, such as provision for rest periods, avoidance of harmful exertion, etc.

(3) That school medical authorities aid in the vocational guidance of persons with rheumatic heart disease.

(4) That candidates for athletic teams be subject to a careful physical examination at the beginning of each practice season.

This article in its entirety comprises a summary of the public health aspects of the disease in question.—*"Salient Public Health Features of Rheumatic Health Disease."* By O. F. Hedley, Passed Assistant Surgeon, United States Public Health Service. *Public Health Reports,* Vol. LII, No. 6, February 5, 1937, p. 164. * * * * *

Health Education.—The Massachusetts Tuberculosis League has issued a special bulletin, entitled, *"Health Education News,"* addressed to superintendents of schools, principals, teachers, school physicians, and school nurses. Its theme is the importance of education in connection with tuberculin testing in schools, which is now being carried on in Massachusetts by state and county sanitoria. Considerable space is devoted to a description of the new teaching unit, *"Preventing Tuberculosis,"* recently published by the National Association for use in junior and senior high schools. The new film, "Behind the Shadows," is also described, and illustrated with several scenes from the picture.

Reviews of recent additions to the League's loan library for teachers and nurses, and a list of recent articles on health education in current magazines and journals complete the bulletin.—*Bulletin of the National Tuberculosis Association,* March, 1937, p. 45.

Tuberculosis.—This well-written article discusses the need for the widespread use in the adolescent age period of procedures to combat tuberculosis such as the tuberculin test, the X-ray, good hygiene of living including plenty of rest and education. Specific worth-while assistance is made available in carrying out these purposes by calling attention to a teaching unit, entitled, "Preventing Tuberculosis," made available this year by the National Tuberculosis Association, which is to be used particularly in junior and senior high schools. A package library with a wealth of good material is also prepared to enrich this teaching unit. "Behind the Shadows," is a new film, designed particularly for use in high schools, and can also be utilized.—*"Preventing Tuberculosis in High Schools."* By Fannie B. Shaw, Secretary of Health Education, and Louis Strachan, Director, Child Health Education, National Tuberculosis Association. *The Journal of Health and Physical Education,* Vol. VIII, No. 3, March, 1937, pp. 136-137, 195.

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Physical Education.—The history of physical education is here summarized since the year 1892, when the first thorough-going history of physical education was published in this country, and the first state law (Ohio) requiring the provision of instruction in "physical training" in public schools and normal schools was passed.

The author states that play was placed in the curriculum of childhood by the law of nature. While remnants of the old systems may deserve some place in the curricula of the schools, those physical activities which have always been fundamental in the life of the child come first, and the teacher who knows how to make the most of them for the good of his pupils well deserves the name of educator.—*"A Spiral in Physical Education."* By James Frederick Rogers, M.D., Consultant in Hygiene, Office of Education. *School Life,* Vol. XXII, No. 5, January, 1937, p. 131.

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Mental Hygiene.—Mental hygiene programs with their varied organization in educational institutions are discussed in this article. The chief limitations of such programs evidently consist of the following:

(1) Failure to identify serious problems early, which can be obviated in large part by more careful training of teachers, nurses, and physicians.

(2) A shortage of specialists who are trained to understand the problems of the student.

(3) The fact that treatment is time consuming. However, many of these who are not seen by specialists might possibly profit by instruction in mental hygiene.

—*"Mental Hygiene Programs in School and Colleges."* By Charles Shepard, M.D., Associate Professor of Hygiene and Physical Education, and Director of Men Students' Health Service, Stanford University, California. *American Journal of Public Health,* Vol. XXVII, No. 1, January, 1937, pp. 67-72.

Squirrel's Bite Serious.—It is a good rule for boys and girls never to let an animal eat from the hand unless he is an old friend. Recently a student was bitten by a squirrel and had to be given the Pasteur treatment for rabies. No matter how gentle a strange animal may appear, it is not wise to extend too much friendship at the first meeting.—*Safety Education,* March, 1937.

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Physically Handicapped.—New York University and the New York State Reconstruction Home at West Haverstraw will be training centers for nurses and other public health workers who wish to prepare for reconstruction work with the physically handicapped. The Children's Bureau of the United States Department of Labor has authorized the states participating in the Social Security Act as it relates to services for crippled children to send trainees for instruction in this special field. The program has been approved by the Committee of the State and Territorial Health Officers for State Programs of Service for Crippled Children as well as by the Children's Bureau.

During the first six weeks of the spring session, which covers the period March 8 to June 18, students will be given basic training in subjects necessary for clinical work in the hospital and field. This instruction will be given at New York University. The second eight weeks will be devoted to clinical work in the New York State Reconstruction Home, visiting field clinics and work with the field nurses in the adjacent areas. A similar session will be conducted from July 6 to October 8, the first six weeks training to be given at Lake Sebago Camp. So far as possible, the work is individualized, so that each nurse receives special training in the work she is to do in her own state.

Further information may be obtained from Dr. George G. Deaver, New York University, Washington Square, New York City.—*Health News,* State Department of Health, Albany, New York, February 22, 1937, p. 30.

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Health Education Scholarship.—The Massachusetts Institute of Technology in Cambridge, Massachusetts, is offering to public health nurses a scholarship in health education for the academic year 1937-38. As in previous years, the National Organization for Public Health Nursing will select and recommend candidates from the public health nursing field.

The scholarship amounts to $500 covering the cost of tuition for the year's work from September to June. It is necessary for the student to be responsible for her own living expenses and costs incidental to the work.

The award will be based on the nature and quality of the previous academic work of the applicant, the ability which she has already shown in professional work in the field of public health nursing or health education, her need of scholarship aid and the probable value of her further contribution to health education.

Preference will be given to those candidates who possess a bachelor's degree.

The scholarship will be awarded in June, 1937, and applications should be received not later than May 15. All those who are interested in this scholarship are invited to write to the National Organization for Public Health Nursing, 50 West 50th Street, New York City.

The National Tuberculosis Association, 50 West Fiftieth Street, New York City, is also offering a scholarship in health education, under similar requirements, open to teachers and public health nurses.

Notice has been received of the death on January 21, 1937, of our highly respected member, Reginald E. S. Challener, M.D., of Toronto, Canada.

NOTES

"Clearly the mandate to the schools is to make safety instruction an integral part of the present day school curriculum." C. B. Glenn, Superintendent of Schools, Birmingham, Alabama.

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The State Tuberculosis Sanitorium, Tom Green County, Texas, issues a valuable pamphlet, entitled, "A Tuberculosis Primer." This is written by Dr. John Potts of Forth Worth, and gives, for school children, teachers, and parents, easily understood information regarding tuberculosis—its cause, means of spread, signs, and treatment.

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Does your dental program include the high school pupil? Caries is more prevalent during adolescence than during any other period. At the University of Buffalo during the five-year period, 1932-1936, 35% of the entering freshmen, examined in October (i.e. those who graduated from high school the previous June), were found to have caries of the teeth.

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The New York City Department of Health is seeking blood donors among persons over 18 years of age, recently convalesced from scarlet fever. They will be paid $5.00 each for small amounts of their blood to be used in the treatment of scarlet fever and related infections.—Public Relations Bureau, Medical Society of the State of New York, March 22, 1937.

In Illinois, 358 School Health Appraisals have been made by the State Department of Public Health in 79 of the 101 counties, between January 1, 1928, and December 31, 1935.

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The first medical pamphlet in America was published at Boston in 1677, and entitled, "Brief Rule to Guide the Common People of New England How to Order Themselves and Theirs in the Small Pocks or Measles."—Public Relations Bureau, Medical Society of the State of New York, March 29, 1937.

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Hoffman-LaRoche, Inc., whose advertisement appears on page VI of this issue, will be glad to send generous samples of Cal-C-Malt to school physicians who request them.

MEETINGS

National Tuberculosis Association, May 31 to June 3, 1937, Milwaukee, Wisconsin.

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American Physical Education Association, April 20-24, 1937, New York City.

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American Association of School Physicians, and American Public Health Association, October 5-8, 1937, New York City.

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Health Section, World Federation of Education Associations, August 2-7, 1937, Tokyo, Japan: For Health Section program covering Health Education, Health Services, and Physical Education, address Miss Sally Lucas Jean, Secretary, 200 Fifth Avenue, New York City.

The Journal of School Health

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